

WHAT IS CLAIMED IS:

1. A method of manufacturing a catalytic converter having a catalyst whose outer peripheral surface is wrapped with a mat, and an outer cylindrical housing which is swaged to support therein the catalyst, the method comprising the steps of:

a detecting step for detecting a pressing force at a time when a pressing device presses the catalyst;

a calculating step for calculating a diameter reduction of the outer cylindrical housing, by which a clearance value between the outer cylindrical housing and the catalyst is set to a desired target value, based on the pressing force detected by the detecting step; and

a swaging step for reducing a diameter of the outer cylindrical housing based on the diameter reduction calculated by the calculating step.

2. The method as claimed in claim 1, wherein the outer cylindrical housing is swaged after the catalyst is press-fitted into the outer cylindrical housing.

3. The method as claimed in claim 1, wherein the catalyst is press-fitted into the outer cylindrical housing after the outer cylindrical housing is swaged.

4. The method as claimed in claim 2 or 3, wherein the press-fitting of the catalyst is carried out using a funnel-shaped enlarged diameter member, and wherein the detection of the pressing force by the detecting step is carried out by detecting a pressing force upon press-fitting the catalyst into the enlarged diameter member.

5. The method as claimed in claim 4, wherein the enlarged diameter member

comprises an inclined portion, and a cylindrical portion having a straight inner surface which continuously extends from the inclined portion, and wherein the detection of the pressing force by the detecting step is carried out at a position just before a rear end portion of the mat enters from the inclined portion into the cylindrical portion as viewed in a press-fitting
5 direction of the catalyst.

6. The method as claimed in claim 5, wherein the cylindrical portion is formed to have a length such that at least an entire length of the catalyst is received therein.

10 7. The method as claimed in claim 2, wherein the detection of the pressing force by the detecting step is carried out by detecting a pressing force of the catalyst after the catalyst is press-fitted into the outer cylindrical housing.

8. The method as claimed in claim 2, further comprising a pre-swaging step for
15 providing a reduced diameter portion on the outer cylindrical housing by a swaging process, in which swaging is performed with a smaller diameter reduction than the diameter reduction in the swaging step, and for providing an inclined stepped portion between this reduced diameter portion and a non-swaged portion, and wherein the detection of the pressing force by the detecting step is carried out at a position just before a rear end portion of the mat enters
20 from the stepped portion into the reduced diameter portion as viewed in a press-fitting direction of the catalyst.

9. The method as claimed in claim 2, further comprising a press-fitting step for temporarily stopping a press-fitting operation after the catalyst is entirely press-fitted inside
25 the outer cylindrical housing, and a re-press-fitting step for restarting the press-fitting

operation temporarily stopped by the press-fitting step and re-press-fitting the catalyst, and wherein the detection of the pressing force by the detecting step is carried out in the re-press-fitting step.

5 10. The method as claimed in any one of claims 2 to 9, wherein the calculation of the diameter reduction by the calculating step is carried out based on data which are previously set in accordance with kinds of mats, catalysts, and outer cylindrical housings.

10 11. The method as claimed in any one of claims 2 to 9, wherein the calculation of the diameter reduction by the calculating step is carried out based on a peak value of the pressing force detected by the detecting step at a predetermined insertion position.

15 12. The method as claimed in any one of claims 2 to 9, wherein a sheet made of polypropylene or polyethylene terephthalate is attached to an outer surface of the mat.

18 13. A catalytic converter which supports a catalyst, whose outer peripheral surface is wrapped with a mat, inside an outer cylindrical housing, the diameter of which is reduced to support the catalyst, the catalytic converter being manufactured by:

 detecting a pressing force at a time when a pressing device presses the catalyst;

20 determining a diameter reduction of the outer cylindrical housing, by which a clearance value between the outer cylindrical housing and the catalyst is set to a desired target value, based on the pressing force thus detected; and

 reducing the diameter of the outer cylindrical housing based on the diameter reduction thus determined.

14. A method of controlling catalytic converters for checking on acceptance/rejection of each catalytic converter, which supports a catalyst, whose outer peripheral surface is wrapped with a mat, inside an outer cylindrical housing, the diameter of which is reduced to support the catalyst, the method comprising the steps of:

5 a detecting step for detecting a pressing force at a time when a pressing device press-fits the catalyst;

a calculating step for calculating a diameter reduction of the outer cylindrical housing, by which a clearance value between the outer cylindrical housing and the catalyst is set to a desired target value, based on the pressing force detected by the detecting step;

10 a swaging step for reducing a diameter of the outer cylindrical housing based on the diameter reduction calculated by the calculating step; and

a determination step for the pressing device pressing the catalyst in the swaged outer cylindrical housing to determine whether or not the catalyst is supported by a predetermined packing density.

15 15. The method as claimed in claim 14, wherein the determination step is carried out after the catalyst is press-fitted into the outer cylindrical housing.

16. The method as claimed in claim 14, wherein the determination step is carried
20 out after the outer cylindrical housing is swaged and in the process of press-fitting the catalyst into the outer cylindrical housing.

17. The method as claimed in any one of claims 14 to 16, wherein a sheet made of polypropylene or polyethylene terephthalate is attached to an outer surface of the mat.